

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of Part 15 regarding new requirements)	
and measurement guidelines for Access Broadband)	ET Docket No. 04-37
over Power Line Systems)	
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)	

To: The Commission

Comments of Frank A. Lynch

The following are comments of Frank A. Lynch, 2528 Oakes Plantation Drive, Raleigh, NC 27610. I am a senior RF engineer at Nortel Networks, holder of a FCC Commercial General Radio Telephone License (GROL), and an Amateur Extra Class Radio Operator, W4FAL. I currently hold two patents related to telecommunications devices and/or techniques. I have over thirty years of experience in the communications industry in the following areas; AM Broadcasting, FM Broadcasting, TV Broadcasting, Radio Common Carrier and Private Carrier Paging, Land Mobile Communications, Cellular, and Point-Point Microwave Systems.

I also serve on the Board of Directors of the South Eastern Repeater Association (SERA) a non-profit corporation in the state of North Carolina, the provides voluntary Amateur Radio Repeater frequency coordination services to amateur radio repeater licensees in eight states in the southeast US, including NC, VA, SC, GA, TN, WV, KY, and MS.

The commission has asked for interested parties to provide comments on "Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems". This I intend to address point by point in my response to the NPRM.

Before I do however, I wish to state for the record, some of my particular experiences dealing with an actual BPL trial installation, dealing with the company that operates that equipment, the FCC's Office of Engineering Technology, and the FCC's Enforcement Bureau.

I live in Raleigh, NC. Progress Energy is conducting a trial in southern Wake County at two different locations. Both of these locations use BPL equipment manufactured by Amperion and both locations use both overhead and underground instances of Access BPL.

In the fall of 2003, I contacted Mr. Len Anthony of Progress Energy after reading a report filed under the NOI 03-104 that stated that Progress had been involved in a trial using an experimental license WD2XCA in the Wakefield Plantation Subdivision in North Raleigh. His report to the FCC stated that there had **been no complaints** to Progress Energy as a result of their BPL operation.

Having followed BPL development in some of the industry publications, I was interested to see what I could hear at the trial site, but was later informed that the trial had been discontinued. Of course Progress had no complaints. The trial was never publicly announced, the emissions from the equipment were not identified in any manner that would facilitate a user of the HF radio spectrum to identify whom the generator of this

signal was, there were no amateur radio operators living in the immediate area. We (local amateur radio groups) later learned that interference was heard by mobile stations along Falls of the Neuse Road in the 10 Meter Amateur Radio band and at a level that precluded mobile communications from taking place as users passed through that area. Not having heard anything like BPL before, they simply didn't know what it was.

Later in 2003, Gary Pearce KN4AQ, Tom Brown N4TAB, and myself spoke with Bill Godwin about participating in observing the trial in southern Wake County for its effects on the HF spectrum. On January 15, 2004 we were invited to observe a trial site off of Holland Church Road. We all visited the site with Bill Godwin, Don Duckett, and Will Roberts, of Progress Energy, and with Gerrett Durling of Amperion.

During that visit we observed significant levels of interference to mobile operations in the 10M and 12M amateur bands where overhead span Access BPL was deployed. We also observed significant interference to other amateur bands and short-wave broadcast bands in the 14 to 16 MHz frequencies on the underground spans in the subdivision.

We learned a few weeks later that another undisclosed site along James Slaughter Road had been put into operation. Significant levels of interference on the 10M and 12M amateur bands resulted from this operation as well. Without exception, all amateurs who are active on the HF amateur bands and live within 2 miles of the trial sites have been able to hear BPL interference at a level that precludes them from operating their amateur stations prior to the deployment of BPL.

I should also mention that during the January 15, 2004 visit to the trial site on Holland Church road, we were able to confirm via assistance from the Amperion engineer that transmissions from a mobile amateur station operating on 10M (specifically 29.60 MHz) at a power level of 5 watts was able to disrupt the Access BPL system from carrying data.

To date, Progress has attempted to mitigate interference complaints by moving the spectrum occupied in the trial systems from 10M and 12M to "other frequencies". Their attempts have not been entirely successful. There is still interference on some amateur bands in the trial areas from overhead spans, and the underground spans are as they have been since the trial began. There are no amateur radio operators that live in either of the trial areas. That in my opinion is the only thing that has made the trial palatable. In the vicinity of the trial area, there are less than a dozen amateurs within 2 miles.

On March 5, 2004 Chairman Powell and several members of his staff visited the site on James Slaughter Road to observe the trial. The trial was largely a media event, but representatives of the amateur radio community did talk with Chairman Powell and members of his staff. On two occasions we offered to show Chairman Powell as well as FCC staff members the levels of interference we were concerned about in a mobile HF station that was parked within a few feet. Both times we were refused, with them citing "schedule limitations". If the commission is as concerned about interference from BPL as they say they are, one would think that they might want to take an opportunity to see what everyone is making so much noise about.

As the ARRL, amateur radio operators, and other users have stated, we are not opposed to BPL per se, or to widespread deployment of broadband Internet in rural areas. Most of us as amateur radio operators make use of the Internet on a daily basis in our hobby to access information, send email, etc. What we are opposed to is the interference potential that BPL systems that use the 2 to 80 MHz spectrum have. The interference is real. I have seen it first hand and would invite representatives from the FCC to take an objective visit to a BPL trial site. I would certainly make myself available to you should you decide to do so.

BPL is unlike anything that I have seen as an RF engineer. It is classified as an un-intentional radiator, yet as a carrier current device must presently be tested to the intentional radiator limits below 30 MHz. It operates 24 hours per day, 7 days a week, and covers large (six MHz) swaths of spectrum for each 2000 ft span of

power line. As a communications engineer familiar with some of the economic aspects of deployment, I do not understand how anyone expects to deploy Access BPL in a rural area and make a business case that works. BPL has the same problem in that scenario that cable and DSL does.

To date the interference has not been mitigated. Progress has told amateur operators they have done all they can do and the level of interference is not harmful. The OET and the Enforcement Bureau is still trying to decide who is going to handle these complaints. I predict that if this is deployed on a large scale (for example in the Raleigh area), that;

- Progress will not be able to find any spectrum in which to operate that doesn't interfere with or is interfered by some licensed user.
- The enforcement bureau will be overloaded with complaints to the point that they aren't able to do anything else.
- Land mobile users of the 30 to 50 MHz spectrum will experience interference when in the deployment areas. They won't know the cause of the interference, just that their radios don't work. They will expend significant funds with their land mobile repair facility to determine the cause.
- This if deployed will be a bigger mess than the public safety – Nextel interference issue. Many technical folks on both sides of the fence saw this coming. Legal, marketing, and finance executives rather than factual engineering prevailed and thus the mess.

I have read the recently release NTIA report with interest. Shame on the Commission for not extending the deadline for this proceeding as the NTIA report (all 153 pages of it) was just released last week. The report confirms what amateur radio operators have known from day one. Power line conductors can make an effective antenna at HF frequencies. I would have like to have included some additional comments from the NTIA report but there has not been time to study the report in sufficient detail to do so.

I will now comment on some of the specific items addressed in this NPRM.

Much of the NPRM is vague. How would a shut down feature work? Who decides if a BPL system is to be shut down? Not the utility, I hope. A utility should be required to demonstrate a frequency plan to the FCC prior to putting a BPL system in operation that addresses the protected frequencies in the NTIA report, address how the utility plans to mitigate amateur radio interference complaints, and be made to research a be aware of commercial land mobile users in the 30 to 50 MHz band (especially public safety) that may receive interference. This portion of the NPRM needs a lot more work.

New measurement standards, that adequately, addresses real world problems with Access BPL that uses the HF spectrum needs to be developed. Those standards also need to address safety issues associated with the "in situ" measurement of those systems. Before that is done, however, I think the Commission, the equipment manufacturers, and the companies who are possibly going to operate these systems, need to think about the technical issues of interference to and from licensed services. Because these systems are on continuously and use up large continuous swaths of spectrum, they are different than most other non-intentional and intentional radiators. I believe based on the NTIA report, and comments by individuals that have observed the trial areas, that more work is needed to refine these measurement procedures. It is clear to me that they are not sufficient to limit interference to licensed users.

I am in favor of a public access database for BPL systems, should they be deployed. BPL emissions should also be identified in a way that a user with nothing other than a radio receiver can find out who the operator of the equipment is.

I am in favor of strict penalties for BPL operators that do not mitigate interference to the satisfaction of existing licensed spectrum users within a reasonable time. BPL operators should also be required to inform their customers that their service may be interfered with by licensed users of the spectrum.

In light of the NTIA report, the limited success that I have seen to date with interference mitigation, I am not in favor of any final decisions being made on this NPRM until some assurances based in engineering fact

Respectfully submitted,

Frank A. Lynch, W4FAL
2528 Oakes Plantation Drive
Raleigh, NC 27610-9328
w4fal@arrl.net